

Annual
WATER
QUALITY
REPORT

Reporting Year 2013



Presented By
City of Troy

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There When You Need Us

We are proud to present our annual water quality report covering all testing performed between January 1 and December 31, 2013. The City of Troy utility operations are dedicated to producing drinking water that meets all state and federal standards. We strive to provide the best quality drinking water to you. We remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

We have a current, unconditioned license to operate our water system. The cost to the City of Troy, payable to the Ohio Treasurer of State, for this license to operate throughout 2013 was \$12,376.04 and is based upon the total number of service connections, which at the time of license invoicing was 10,669.

Source Water Assessment

The City of Troy developed and implemented a groundwater monitoring program in 1984. There are 16 monitoring wells currently used to study groundwater quality beyond the aquifer area under our wells. Two additional monitoring wells will be installed in 2014. These serve as an early warning system tool should dangerous contaminants threaten our current production wells. In 1992, Troy developed a Wellhead Protection Program, which serves to inventory potential sources of groundwater contamination within a 5-year time of travel zone around our existing wells. Zoning regulations have been adopted to further reduce the risk of groundwater contamination within a 1-yr. time of travel zone around our wells. Public outreach efforts to inform and educate our residents will also play a key role in minimizing risks to this very important resource. A Source Water Assessment and Protection (SWAP) Plan is part of the City of Troy's wellhead protection and monitoring program. An update of this plan was initiated in 2010 and completed in 2013. This updated SWAP Plan, thoroughly reviewed by hydrogeologists from Arcadis, Inc., is now available at our office for review. It includes an assessment and inventory of the possible contaminant sources within the delineated area.

Substances That Could Be in Water

To ensure that tap water is safe to drink, U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, in some cases, radioactive material; and substances resulting from the presence of animals or from human activity. Substances that may be present in source water include:

Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife;

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;

Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses;

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and may also come from gas stations, urban stormwater runoff, and septic systems;

Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

Where Does My Water Come From?

City of Troy customers are fortunate to reside above an abundant and accessible water supply known as the Great Miami Buried Valley Aquifer (GMBVA), an enormous buried valley sand and gravel aquifer associated with the Great Miami River. The GMBVA extends from north of Troy to the Ohio River, ranging from 30 to 300 feet in depth and 1 to 3 miles in width. This aquifer is constantly being replenished by underground sources, precipitation, and riverbed filtration. The city uses 10 production wells to withdraw water from this aquifer for treatment at the Water Treatment Plant (WTP) located at 300 E. Staunton Rd. in Troy. These wells have screened intervals in the aquifer at depths ranging from 44 to 132 feet, and are between 16 to 38 inches in diameter. Water in the aquifer is pumped to the WTP where it is softened to remove calcium and magnesium hardness, clarified, stabilized, disinfected, and then filtered before being pumped to our customers. In 2013, our treatment facility provided approximately 1.459 billion gallons of clean, softened drinking water to our customers in Troy and surrounding communities.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or <http://water.epa.gov/drink/hotline>.

Lead in Home Plumbing

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. We are responsible for providing high-quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at www.epa.gov/safewater/lead.

The City of Troy conducted lead and copper testing in June 2013. Samples were drawn from 30 locations within the Troy distribution system and then analyzed by an independent Ohio EPA-approved laboratory. No detections of lead or copper were found in any Troy samples. This testing is performed every three years.

Community Participation

You are invited to express issues concerning water quality to the Troy City Council, which meets at 7 pm on the second floor Council Chambers at City Hall, 100 South Market Street, Troy, on the first and third Mondays of each month. Notice of special Council Committee meetings, including the Utilities Committee, is posted on the City of Troy Web site, www.troyohio.gov, and also at City Hall.

QUESTIONS?

For more information about this report, or for any questions relating to your drinking water, please contact Tim Ray, Water Plant Superintendent, or Jeff Monce, Assistant Plant Superintendent, at (937) 339-4826, or via email: tim.ray@troyohio.gov or jeff.monce@troyohio.gov. Our fax number is (937)-339-0838.

Water Treatment Process

The treatment process consists of a series of steps. First, raw water is drawn from our well fields and sent to our water plant on Staunton Road. Troy's ground water has a hardness ranging from 360 ppm to 400 ppm. Our lime/soda-softening plant then utilizes gravity flow to move the water through the entire treatment process, eliminating costly power for the pumping of water or chemicals. Once at the plant, the water proceeds through an upflow clarifier basin, where lime (calcium oxide) and soda ash are added to remove calcium and magnesium hardness. The addition of lime and soda ash raises the pH to a minimum of 10.6 and causes small particles (floc) to adhere to one another, making them heavy enough to settle. Treated water flows to a secondary upflow clarifier for further floc settling. Settled particles (softening residuals) are removed automatically and stored in lagoons, to be converted back into usable lime. The water is then restablized (pH reduced to 8.7-8.9) by the addition of carbon dioxide, and chlorine is added as a disinfectant. Finally, the water is filtered through layers of fine anthracite coal and silicate sand. As smaller, suspended particles are removed, turbidity disappears and clear water emerges.

Chlorine is added prior to filtration as a precaution against any bacteria that may be present. The amount of chlorine used is carefully monitored, adding the lowest quantity necessary to protect the safety of your water without compromising taste. Finally, the softened water (with a hardness of 120 ppm to 130 ppm) is pumped to sanitized underground reservoirs, pipelines and water towers, and then into your home or business.

Year 2013 in Review...

In addition to serving Troy customers, we pumped 130,526,000 gallons to Miami County and 129,591,000 gallons to West Milton.

Other 2013 statistics: 3,710 feet of water main pipe installed, 20 main breaks repaired, 35 taps made, 3 new services installed, 36 service connections upgraded, and 315 customer high water usage alerts investigated.

Major maintenance items for 2013 included sandblasting and recoating of two clarifier basins, and the interior inspection and washout of the Stanfield and Barnhart Road elevated tanks. Exterior cleaning was also completed on the Stanfield Tank. In 2014 the Herrlinger Park elevated tank will be inspected, cleaned, and have the exterior surfaces recoated. The 4 million gallon clearwell (dome structure east of plant) underwent a full interior inspection after 15 years of being in service. No structural deficiencies were noted.

In December 2013, the City of Troy contracted with the City of Dayton for lime residuals management. Under this 5-year contract, the City of Dayton will remove the lime softening residuals from our collection and storage lagoons, transport them to the Dayton lime kiln operations, and process them. These residuals, after processing through the kiln, can be used again in our treatment process. These contracted services will result in annual operational savings of \$60,000 to \$70,000 for the City of Troy.



TipTopTap

The most common signs that your faucet or sink is affecting the quality of your drinking water are discolored water, sink or faucet stains, a buildup of particles, unusual odors or tastes, and a reduced flow of water. The solutions to these problems may be in your hands.

Kitchen sink and drain

Hand washing, soap scum buildup, and the handling of raw meats and vegetables can contaminate your sink. Clogged drains can lead to unclean sinks and backed up water in which bacteria (i.e., pink and black colored slime growth) can grow and contaminate the sink area and faucet, causing a rotten egg odor. Disinfect and clean the sink and drain area regularly. Also, flush regularly with hot water.

Faucets, screens, and aerators

Chemicals and bacteria can splash and accumulate on the faucet screen and aerator, which are located on the tip of faucets and can collect particles like sediment and minerals resulting in a decreased flow from the faucet. Clean and disinfect the aerators or screens on a regular basis.

Check with your plumber if you find particles in the faucet's screen as they could be pieces of plastic from the hot water heater's dip tube. Faucet gaskets can break down and cause black, oily slime. If you find this slime, replace the faucet's gasket with a higher-quality product. White scaling or hard deposits on faucets and shower heads may be caused by hard water or water with high levels of calcium carbonate. Clean these fixtures with vinegar or use water softening to reduce the calcium carbonate levels for the hot water system.

Water filtration/treatment devices

A smell of rotten eggs can be a sign of bacteria on the filters or in the treatment system. The system can also become clogged over time so regular filter replacement is important. (Remember to replace your refrigerator filters!)

Sampling Results

During the past year we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic or synthetic organic contaminants. The table below shows only those contaminants that were detected in the water. The State of Ohio allows us to monitor for some substances less than once per year because the concentrations of these substances are low and do not change frequently. In these cases, the most recent data are included.

REGULATED SUBSTANCES							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Barium (ppm)	2013	2	2	0.0632	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
cis-1,2-Dichloroethylene ¹ (ppb)	2013	70	70	0.1375	0–0.57	No	Discharge from industrial chemical factories
Chlorine ² (ppm)	2013	[4]	[4]	0.82	0.21–1.12	No	Water additive used to control microbes
Fluoride ³ (ppm)	2013	4	4	0.40	NA	No	Erosion of natural deposits; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAA]–Stage 2 ⁴ (ppb)	2013	60	NA	4.00	1.4–5.1	No	By-product of drinking water disinfection
Nitrate (ppm)	2013	10	10	0.17	<0.1–0.17	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes]–Stage 2 ⁴ (ppb)	2013	80	NA	21.1	12.9–27.0	No	By-product of drinking water chlorination needed to kill harmful organisms. TTHMs are formed when source water contains large amounts of organic matter.
Tetrachloroethylene ¹ (ppb)	2013	5	0	0.1275	0–0.87	No	Discharge from factories and dry cleaners
SECONDARY SUBSTANCES							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Total Dissolved Solids [TDS] (ppm)	2013	500	NA	210	NA	No	Runoff/leaching from natural deposits
UNREGULATED SUBSTANCES ⁵							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE			
Bromodichloromethane (ppb)	2013	5.4	2.1–9.0	By-product of disinfection, component of the Total Trihalomethanes (TTHMs) shown above in the Regulated Substances table			
Bromoform (ppb)	2013	2	0.8–2.7	By-product of disinfection, component of the Total Trihalomethanes (TTHMs) shown above in the Regulated Substances table			
Chloroform (ppb)	2013	4.1	1.5–7.6	By-product of disinfection, component of the Total Trihalomethanes (TTHMs) shown above in the Regulated Substances table			
Dibromochloromethane (ppb)	2013	5.6	2.5–8.4	By-product of disinfection, component of the Total Trihalomethanes (TTHMs) shown above in the Regulated Substances table			

Definitions

AL (Action Level): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA: Not applicable

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

¹ Amount Detected is highest Quarterly Running Annual Average for all samples April 2012-December 2013.

² The value of 0.82 ppm as Amount Detected is the running annual average of the TOTAL CHLORINE measured in the routine bacteria samples taken 30 times a month from the City of Troy distribution system, January 1, 2013 - December 31, 2013.

³ This is the amount of fluoride naturally occurring in the City of Troy raw well water, and remains in the finished water pumped to the distribution system. The City of Troy does not add fluoride during the treatment process.

⁴ Amount Detected is highest compliance value from Quarterly Locational Running Annual Averages. Range values derived from quarterly sampling results.

⁵ Unregulated Substances Amount Detected values are averages of all 2013 sampling.